

## WHAT IS CLAIMED IS:

1. A PNNI routing computation system which is used in a PNNI network including a plurality of ATM exchanges connected to each other via links, and which performs PNNI routing computation on establishing a connection between subscribers, each ATM exchange comprising:

a storage unit which stores plural types of weight values for each link;

a computing unit which computes total weight value for each possible PNNI route between the subscribers by referring to one of the types of weight values selected by a calling subscriber; and

a selecting unit which selects a route having the minimum total weight value among the possible PNNI routes as a result of the PNNI routing computation.

2. The PNNI routing computation system of claim 1, wherein the plural types of the weight values include a type of weight values based on administrative weight (AW) and a type of weight values based on cell transfer delay (CTD).

3. A PNNI routing computation system which is used in a PNNI network including a plurality of ATM exchanges connected each other via links, and which performs PNNI routing computation on establishing a connection between subscribers, each ATM exchange comprising:

a storage unit which stores the plural types of weight values for each link;

a computing unit which computes total weight value for each possible PNNI route between the subscribers by referring to one of the types of weight values selected by a calling subscriber; and

a selecting unit which selects a route having the minimum total weight value among the possible PNNI routes as a result of the PNNI routing computation, wherein the types of the weight values include a type of weight values based on administrative weight (AW) and a type of weight values based on cell transfer delay (CTD).

4. A PNNI routing computation system which is used in a PNNI network including a plurality of ATM exchanges connected each other via links, and which performs PNNI routing computation on establishing a connection between subscribers, each ATM exchange comprising:

a first storage unit which stores plural types of weight values for each link, the plural types of weight values being provided by a subscriber accommodated in the ATM exchange;

a network information process unit which exchanges the plural types of weight values to the next ATM exchanges to obtain the plurality types of weight values for all links of the PNNI network and stores the weight values obtained from the next ATM exchanges into the first storage unit;

a computing unit which computes total weight values for all possible PNNI routes from the ATM exchange to one of the other ATM exchanges by referring to the plural types of weight values stored in the first storage unit; and

a second storage unit which stores the computed total weight values for each PNNI route.

5. The PNNI routing computation system of claim 4, wherein the first storage unit further includes a type of weight values used for routing computation and the type is provided by the subscriber accommodated in the ATM exchange, and wherein, each ATM exchange further comprises:

a first call process unit which, when a subscriber accommodated in an ATM exchange including the first call process unit issues a call request, selects a PNNI route having the minimum total weight value from the second storage unit based on the type of weight values provided by the calling subscriber.

6. The PNNI routing computation system of claim 5, wherein the types of the weight values include a type of weight values based on administrative weight (AW) and a type of weight values based on cell transfer delay (CTD).

7. The PNNI routing computation system of claim 5, wherein each ATM exchange further comprises:

a second call process unit which, when Soft PVC connection is produced between the subscribers, judges one subscriber as a calling subscriber and the other subscriber as a receiving subscriber, and sends a call request of Soft PVC to an ATM exchange accommodating the calling subscriber.

8. A PNNI routing computation system which is used in a PNNI network including a plurality of ATM exchanges connected to each other via links, and which performs PNNI routing computation on establishing a connection between subscribers, each ATM exchange comprising:

a first storage unit which stores plural types of weight values for each link and a type of the weight values used for routing computation, the plural types of weight values and the type used for routing computation being provided by a subscriber accommodated in the ATM exchange;

a network information process unit which exchanges the plural types of weight values to the next ATM exchanges to obtain the plural types of weight values for all links of the PNNI network and stores the weight values obtained from the next ATM exchanges into the first storage unit;

a computing unit which computes total weight value for all possible PNNI routes from the ATM exchange to one of the other ATM exchanges by referring to the plural types of weight values stored in the first storage unit;

a second storage unit which stores the computed total weight values for each PNNI route; and

a first call process unit which, when a subscriber accommodated in an ATM exchange including the first call process unit issues a call request, selects a PNNI route having the minimum total weight value from the second storage unit based on the type of weight values provided by the calling subscriber.

9. The PNNI routing computation system of claim 8, wherein the types of the weight values include a type of weight values based on administrative weight (AW) and a type of weight value based on cell transfer delay (CTD).

10. The PNNI routing computation system of claim 8, wherein each ATM exchange further comprises:

a second call process unit which, when Soft PVC connection is produced between the subscribers, regards one subscriber as a calling subscriber and the other subscriber as a receiving subscriber, and sends a call request of Soft PVC to an ATM exchange accommodating the calling subscriber.

11. A method of a PNNI routing computation on establishing a connection between subscribers in ATM exchanges which are included in a PNNI network and are connected each other via links, the method comprising the steps of:

computing total weight value for each possible PNNI route between the subscribers by referring to one of types of weight values selected by a calling subscriber, each of the weight values corresponding to the link; and

selecting a route having the minimum total weight value among the possible PNNI routes.

12. A method of a PNNI routing computation on establishing a connection between subscribers in ATM exchanges which are included in a PNNI network and are connected each other via links, the method comprising the steps of:

computing total weight value for each possible PNNI route between the subscribers by referring to one of types of weight values selected by a calling subscriber, each of the weight values corresponding to the link; and

selecting a route having the minimum total weight value among the possible PNNI routes, wherein the types of the weight values include a type of weight values based on administrative weight (AW) and a type of weight values

based on cell transfer delay (CTD).

13. A method of a PNNI routing computation on establishing a connection between subscribers in ATM exchanges which are included in a PNNI network and are connected each other via links, the method comprising the steps of:

exchanging plural types of weight values each of which corresponds to a link and which are provided in a subscriber accommodated in the ATM exchange, to the next ATM exchanges to obtain the plural types of weight values for all links of the PNNI network;

computing total weight values for all possible PNNI routes from the ATM exchange to one of the other ATM exchanges by referring to the obtained plural types of weight values; and

storing the computed total weight values for each PNNI route.

14. A method of a PNNI routing computation on establishing a connection between subscribers in ATM exchanges which are included in a PNNI network and are connected each other via links, the method comprising the steps of:

exchanging plural types of weight values each of which corresponds to a link and which are provided in a subscriber accommodated in the ATM exchange, to the next ATM exchanges to obtain the plural types of weight values for all links of the PNNI network;

computing total weight values for all possible PNNI routes from the ATM exchange to one of the other ATM

exchanges by referring to the obtained plural types of weight values;

storing the computed total weight values for each PNNI route; and

selecting, when a subscriber accommodated in an ATM exchange issues a call request, a PNNI route having the minimum total weight value from the stored PNNI routes based on a type of weight values provided by the calling subscriber.

15. A recording medium readable by a computer, tangibly embodying a program of instructions executable by the computer to perform a method of a PNNI routing computation on establishing a connection between subscribers in ATM exchanges which are included in a PNNI network and are connected each other via links, the method comprising the steps of:

computing total weight value for each possible PNNI route between the subscribers by referring to one of types of weight values selected by a calling subscriber, each of the weight values corresponding to the link; and

selecting a route having the minimum total weight value among the possible PNNI routes.

16. A computer data signal embodied in a carrier wave and representing a sequence of instructions which, when executed by a processor, cause the processor to perform a method of a PNNI routing computation on establishing a connection between subscribers in ATM exchanges which are included in a PNNI network and are connected each other via links, the method comprising the steps of:

computing total weight value for each possible PNNI route between the subscribers by referring to one of types of weight values selected by a calling subscriber, each of the weight values corresponding to the link; and

selecting a route having the minimum total weight value among the possible PNNI routes.

17. A program product comprising, computer readable instructions and a recording medium bearing the computer readable instructions; the instructions being adaptable to enable a computer to perform a method of a PNNI routing computation on establishing a connection between subscribers in ATM exchanges which are included in a PNNI network and are connected each other via links, the method comprising the steps of:

computing total weight value for each possible PNNI route between the subscribers by referring to one of types of weight values selected by a calling subscriber, each of the weight values corresponding to the link; and

selecting a route having the minimum total weight value among the possible PNNI routes.

18. A recording medium readable by a computer, tangibly embodying a program of instructions executable by the computer to perform a method of a PNNI routing computation on establishing a connection between subscribers in ATM exchanges which are included in a PNNI network and are connected each other via links, the method comprising the steps of:

exchanging plural types of weight values each of which corresponds to a link and which are provided in a



subscriber accommodated in the ATM exchange, to the next ATM exchanges to obtain the plural types of weight values for all links of the PNNI network;

computing total weight values for all possible PNNI routes from the ATM exchange to one of the other ATM exchanges by referring to the obtained plural types of weight values; and

storing the computed total weight values for each PNNI route.

19. A computer data signal embodied in a carrier wave and representing a sequence of instructions which, when executed by a processor, cause the processor to perform a method of a PNNI routing computation on establishing a connection between subscribers in ATM exchanges which are included in a PNNI network and are connected each other via links, the method comprising the steps of:

exchanging plural types of weight values each of which corresponds to a link and which are provided in a subscriber accommodated in the ATM exchange, to the next ATM exchanges to obtain the plural types of weight values for all links of the PNNI network;

computing total weight values for all possible PNNI routes from the ATM exchange to one of the other ATM exchanges by referring to the obtained plural types of weight values; and

storing the computed total weight values for each PNNI route.

20. A program product comprising, computer readable instructions and a recording medium bearing the computer

readable instructions; the instructions being adaptable to enable a computer to perform a method of a PNNI routing computation on establishing a connection between subscribers in ATM exchanges which are included in a PNNI network and are connected each other via links, the method comprising the steps of:

exchanging plural types of weight values each of which corresponds to a link and which are provided in a subscriber accommodated in the ATM exchange, to the next ATM exchanges to obtain the plural types of weight values for all links of the PNNI network;

computing total weight values for all possible PNNI routes from the ATM exchange to one of the other ATM exchanges by referring to the obtained plural types of weight values; and

storing the computed total weight values for each PNNI route.

21. A routing computation system which is used in an IP network including a plurality of routing devices connected to each other via links, and which performs a routing computation on establishing a connection between subscribers, each routing device comprising:

a storage unit which stores plural types of weight values for each link;

a computing unit which computes total weight value for each possible route between the subscribers by referring to one of the types of weight values selected by a calling subscriber; and

a selecting unit which selects a route having the minimum total weight value among the possible PNNI routes as a result of the routing computation.

22. A routing computation system which is used in an IP network including a plurality of routing devices connected each other via links, and which performs a routing computation on establishing a connection between subscribers, each routing device comprising:

a storage unit which stores the plural types of weight values for each link;

a computing unit which computes total weight value for each possible route between the subscribers by referring to one of the types of weight values selected by a calling subscriber; and

a selecting unit which selects a route having the minimum total weight value among the possible PNNI routes as a result of the routing computation, wherein the types of the weight values include a type of weight values based on administrative weight (AW) and a type of weight values based on cell transfer delay (CTD).

23. A routing computation system which is used in an IP network including a plurality of routing devices connected each other via links, and which performs a routing computation on establishing a connection between subscribers, each routing device comprising:

a first storage unit which stores plural types of weight values for each link, the plural types of weight values being provided by a subscriber accommodated in the routing device;

a network information process unit which exchanges the plural types of weight values to the next routing devices to obtain the plurality types of weight values for all links of the IP network and stores the weight values obtained from the next routing devices into the first storage unit;

a computing unit which computes total weight values for all possible routes from the routing device to one of the other routing devices by referring to the plural types of weight values stored in the first storage unit; and

a second storage unit which stores the computed total weight values for each route.

24. A routing computation system which is used in an IP network including a plurality of routing devices connected to each other via links, and which performs a routing computation on establishing a connection between subscribers, each routing device comprising:

a first storage unit which stores plural types of weight values for each link and a type of the weight values used for routing computation, the plural types of weight values and the type used for routing computation being provided by a subscriber accommodated in the routing device;

a network information process unit which exchanges the plural types of weight values to the next routing devices to obtain the plural types of weight values for all links of the IP network and stores the weight values obtained from the next routing devices into the first storage unit;

a computing unit which computes total weight value for all possible routes from the routing device to one of the other routing devices by referring to the plural types of weight values stored in the first storage unit;

a second storage unit which stores the computed total weight values for each route; and

a first call process unit which, when a subscriber accommodated in a routing device including the first call process unit issues a call request, selects a route having the minimum total weight value from the second storage unit based on the type of weight values provided by the calling subscriber.

25. A method of an IP routing computation on establishing a connection between subscribers in routing devices which are included in an IP network and are connected each other via links, the method comprising the steps of:

computing total weight value for each possible route between the subscribers by referring to one of types of weight values selected by a calling subscriber, each of the weight values corresponding to the link; and

selecting a route having the minimum total weight value among the possible routes.

26. A method of an IP routing computation on establishing a connection between subscribers in routing devices which are included in an IP network and are connected each other via links, the method comprising the steps of:

exchanging plural types of weight values each of which corresponds to a link and which are provided in a subscriber accommodated in the routing device, to the next routing devices to obtain the plural types of weight values for all links of the IP network;

computing total weight values for all possible routes from the routing device to one of the other routing devices by referring to the obtained plural types of weight values; and

storing the computed total weight values for each route.

27. A computer data signal embodied in a carrier wave and representing a sequence of instructions which, when executed by a processor, cause the processor to perform a method of an IP routing computation on establishing a connection between subscribers in routing devices which are included in an IP network and are connected each other via links, the method comprising the steps of:

exchanging plural types of weight values each of which corresponds to a link and which are provided in a subscriber accommodated in the routing device, to the next routing devices to obtain the plural types of weight values for all links of the IP network;

computing total weight values for all possible routes from the routing device to one of the other routing device by referring to the obtained plural types of weight values; and

storing the computed total weight values for each route.

28. A program product comprising, computer readable instructions and a recording medium bearing the computer readable instructions; the instructions being adaptable to enable a computer to perform a method of an IP routing computation on establishing a connection between subscribers in routing devices which are included in an IP network and are connected each other via links, the method comprising the steps of:

exchanging plural types of weight values each of which corresponds to a link and which are provided in a subscriber accommodated in the routing device, to the next routing devices to obtain the plural types of weight values for all links of the IP network;

computing total weight values for all possible routes from the routing device to one of the other routing devices by referring to the obtained plural types of weight values; and

storing the computed total weight values for each route.